HMT Solder™ Liquid Flux

Safety Data Sheet (SDS)

www.HMTsolder.com

To comply with European CLP Regulation 1272/2008, US 29CFR 1910.1200 OSHA's Hazard Communication Standard, and Australian NOHSC: 1008 [2004] and ADG Code 7.4

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	HMT Solder Liquid Flux Series: HMT7-LF, HMT8-LF, HMT9-LF, HMT43-LF
SYNONYMS:	
PART NUMBERS:	HMT7-LF, HMT7-LF-1GAL, HMT7-LF-5GAL, HMT7-LF-55GAL, HMT8-LF, HMT8-LF-1GAL, HMT8-LF-5GAL, HMT8-LF-55GAL, HMT9-LF, HMT9-LF-1GAL, HMT9-LF-5GAL, HMT9-LF-55GAL, HMT43-LF, HMT43-LF-1GAL, HMT43-LF-5GAL, HMT43-LF-55GAL
MANUFACTURER:	HMT Solder Inc.
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REVISION DATE:	2021/04/22
REVISION NUMBER:	1.0
REVISED BY:	HMT Solder Product Safety

PRODUCT USE: Bonding solder joints in production and repair of circuit boards. This product is for industrial use only.

2. HAZARD IDENTIFICATION

Classified in accordance with European CLP Regulation 1272/2008

Acute Tox.	4
Eye Irrit.	2
Flam. Liq.	2
Skin Sens.	1
Skin Irrit.	3
Resp. Sens.	1
STOT SE	3

CHEMICAL NAME:	NA
CHEMICAL FAMILY:	Mixture
CHEMICAL FORMULA:	Proprietary

ROUTES OF ENTRY: Inhalation, Ingestion, Skin/Eye Contact

TARGET ORGANS: NA

GHS/CLP:

Signal Word: Danger

GHS/CLP LABEL ELEMENTS:

Hazard statement(s)

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Precautionary statement(s)

P102	Keep out of reach of children.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P233	Keep container tightly closed.
P260	Do not breathe dust/fume/gas/mist/vapor/spray.

P262	Do not get in eyes, on skin, or on clothing.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink, or smoke when using this product.
P271	Use in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	In case of inadequate ventilation wear respiratory protection.
P301/P330/P331/P310	IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a POISON CENTER/Doctor.
P303/P361/P352/P333/P313	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with soap & water. Get medical advice/attention if skin irritation or rash occurs or if you feel unwell.
P304/P340/312	IF INHALED: Remove victim to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P305/P351/338/P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call POISON CENTER/Doctor.
P308/P313	IF EXPOSED OR CONCERNED: Get medical advice/attention.
P342/P311	IF EXPERIENCING RESPIRATORY SYMPTOMS: Call POISON CENTER/Doctor.
P362	Take off contaminated clothing and wash it before reuse.
P370/P378	IN CASE OF FIRE: Use appropriate media for extinction.
P391	Collect spillage.
P402/P404	Store in a dry place. Store in a closed container.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT:	May cause moderate irritation. Do not allow material to come in contact with eyes.
SKIN CONTACT:	May cause moderate skin irritation.
INHALATION:	Dizziness, blurred vision, headache, irritation of the mucous membranes, loss of appetite, and inability to concentrate.
INGESTION:	Harmful if swallowed. May cause irritation to the mouth, throat, and stomach. May cause abdominal discomfort, nausea, vomiting, and/or diarrhea.
CHRONIC:	Not established.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE: Diseases of the blood-forming organs, kidneys, nervous and possibly reproductive systems. Occupational Asthma.

SECTION 2 NOTES:
HMT Solder Inc. does not recommend, manufacture, market, or endorse any of its products for human consumption.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Classified in accordance with European CLP Regulation 1272/2008

Hazardous Ingredients (1)	C.A.S. Number	Weight Percent	OSHA PEL mg/m^3	ACGIH TLV TWA mg/m^3	LD 50 Ingested g/Kg	LD 50 Inhaled g/m^3
Isopropyl Alcohol	67-63-0 200-661-7	<95	NE	NE	NE	NE
Ethanol	64-17-5	<97	NE	NE	NE	NE
Methanol	67-56-1	8-15	NE	NE	NE	NE
Mineral Spirits	8032-32-4	3-9	NE	NE	NE	NE
Dimethylamine Hydrochloride	506-59-2	2-6	NE	NE	NE	NE
Carboxylic Acid	68937-69-9	1-6	NE	NE	NE	NE
Hydrobromic Acid	10035-10-6	1-5	NE	NE	NE	NE
Alkanolamine	141-43-5	1-5	NE	NE	NE	NE
CTAB	57-09-0	0.1-3.0	NE	NE	NE	NE

Non-Hazardous Ingredients	C.A.S. Number	Weight Percent	OSHA PEL mg/m^3	ACGIH TLV TWA mg/m^3	LD 50 Ingested g/Kg	LD 50 Inhaled g/m^3
Water	7732-18-5 231-791-2	25-35	NE	NE	NE	NE
Surfactants	NA	<4	NE	NE	NE	NE
Rheological Modifier	NA	<5	NE	NE	NE	NE

SECTION 3 NOTES:
(1) Per 29 CFR 1910 the mixture has not been tested as a whole. All hazardous components, which comprise 1% of the mixture (0.1% carcinogenic), are listed. Percentages of individual components are not listed as this information is considered a trade secret.

(2) The identity of the specific chemical(s) is being withheld as a trade secret per 29 CFR 1910.1200. The hazardous properties of these ingredients are disclosed in this SDS.

4. FIRST-AID MEASURES

EYES: Flush with plenty of water, contact a physician. If contact lenses can be removed easily, flush eyes without contact lenses.

SKIN: Wash affected area with plenty of warm, soapy water. If irritation persists, seek medical attention.

INGESTION: Call a physician or Poison Control Center immediately. Do not induce vomiting.

INHALATION: Remove to fresh air or administer oxygen. If not breathing, seek immediate medical attention.

5. FIREFIGHTING MEASURES

EXTINGUISHING MEDIA: Dry chemical, foam

SPECIAL FIRE FIGHTING PROCEDURES: Do not use water. Use NIOSH-approved self-contained Breathing Apparatus and full protective clothing if involved in a fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Highly flammable liquid and vapor.

6. ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: If material spills or leaks collect and place it in a plastic or glass jar. Follow on-site personal protective equipment recommendations.

ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment. Collect spillage.

SECTION 6 NOTES:
See Sections 2, 4, and 7 for additional information.

7. HANDLING AND STORAGE

HANDLING/STORAGE: Keep containers tightly closed when not in use. Use care to avoid spills. Avoid inhalation of fumes. Avoid contact with eyes, skin, and clothing. Store in a closed corrosive resistant container, with corrosive resistant liner, in cool dry place. Wear appropriate personal protective equipment when working with or handling. Always wash hands thoroughly after handling this product. Dispose of following Federal, State/Provincial, and Local regulations.

OTHER PRECAUTIONS: Empty containers may retain product residues in vapor, liquid, and/or solid form. All labeled hazard precautions should be observed.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in work areas. Always wash hands after handling material and before applying or using cosmetics/food/drink/tobacco.

SECTION 7 NOTES:
For industrial use only.
Keep out of reach of children.
Not for internal consumption.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limit Values:

Isopropyl Alcohol	**67-63-0**
Austria	200 ppm TWA [TMW] (short time value for large casting); 500 mg/m3 TWA [TMW] (short time value for large casting) 800 ppm STEL [KZW] 4 X 15 min; 2000 mg/m3 STEL [KZW] 4 X 15 min; 800 ppm STEL [KZW] (STEL for large casting valid till 12/31/2013) 4 X 30 min; 2000 mg/m3 STEL [KZW] (STEL for large casting valid till 12/31/2013) 4 X 30 min
Belgium	200 ppm TWA; 500 mg/m3 TWA 400 ppm STEL; 1000 mg/m3 STEL
Denmark	200 ppm TWA; 490 mg/m3 TWA
Finland	200 ppm TWA; 500 mg/m3 TWA 250 ppm STEL; 620 mg/m3 STEL
France	400 ppm STEL [VLCT]; 980 mg/m3 STEL [VLCT]
Germany (TRGS)	200 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2; 500 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2
Germany (DFG)	200 ppm TWA MAK; 500 mg/m3 TWA MAK 400 ppm Peak; 1000 mg/m3 Peak
Greece	400 ppm TWA; 980 mg/m3 TWA 500 ppm STEL; 1225 mg/m3 STEL
Ireland	200 ppm TWA 400 ppm STEL Potential for cutaneous absorption
Portugal	200 ppm TWA [VLE-MP] 400 ppm STEL [VLE-CD]
Spain	200 ppm TWA [VLA-ED] (it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary or biocide compound); 500 mg/m3 TWA [VLA-ED] (it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary or biocide compound) 400 ppm STEL [VLA-EC]; 1000 mg/m3 STEL [VLA-EC]
Sweden	150 ppm LLV; 350 mg/m3 LLV 250 ppm STV; 600 mg/m3 STV
United Kingdom	400 ppm TWA; 999 mg/m3 TWA 500 ppm STEL; 1250 mg/m3 STEL
ACGIH	200 ppm TWA 400 ppm STEL
NIOSH	400 ppm TWA; 980 mg/m3 TWA 500 ppm STEL; 1225 mg/m3 STEL 2000 ppm IDLH (10% LEL)

OSHA (US)	400 ppm TWA; 980 mg/m3 TWA
Mexico	400 ppm TWA LMPE-PPT; 980 mg/m3 TWA LMPE-PPT 500 ppm STEL [LMPE-CT]; 1225 mg/m3 STEL [LMPE-CT]

Also see section 3.

ENGINEERING CONTROLS: Based on available information, additional ventilation is not required. Ensure compliance with applicable exposure limits.

RESPIRATORY PROTECTION: Use with adequate ventilation.

EYE PROTECTION: Use with appropriate safety glasses (EU: EN 166-S).

SKIN PROTECTION: Not required.

WORK HYGIENIC PRACTICES: Cosmetics/Food/Drink/Tobacco should not be consumed or used in areas where solder products may be used. Always wash hands after handling soldering products and before applying or using cosmetics/food/drink/tobacco.

OTHER: Maintain eye wash stations in work areas. Avoid the use of contact lenses in high fume areas. Clean protective equipment regularly. Clean up spills immediately.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, White, or Yellow to Dark Amber liquid
ODOR:	Alcohol
ODOR THRESHOLD:	N/A
pH as SUPPLIED:	N/A
MELTING POINT:	N/A
FREEZING POINT:	-89°C (literature value)
INITIAL BOILING POINT:	+82°C (literature value)
BOILING RANGE:	N/A
FLASH POINT:	12°C (estimated based on isopropyl alcohol)
EVAPORATION RATE:	N/A
FLAMMABILITY (solid):	N/A
UPPER/LOWER FLAMMABILITY:	NE
UPPER/LOWER EXPLOSIVE LIMITS:	12% (V) / 2% (V)
VAPOR PRESSURE (mmHg):	33 mmHg @ 20°C (literature value)
VAPOR DENSITY (AIR = 1):	2.1 (literature value)
SPECIFIC GRAVITY (WATER = 1):	0.7855 @ 20°C (literature value)
RELATIVE DENSITY:	NE
SOLUBILITY IN WATER:	100%
PARTITION COEFFICIENT (n-octanol/water):	0.05 (measured value)
AUTOIGNITION TEMPERATURE:	399°C (literature value)
DECOMPOSITION TEMPERATURE:	N/A
VISCOSITY:	N/A

10. STABILITY AND REACTIVITY

REACTIVITY:	Not known to occur
STABILITY:	Stable under normal conditions of use
CONDITIONS TO AVOID (STABILITY):	Avoid direct sunlight
INCOMPATIBILITY (MATERIAL TO AVOID):	Aldehydes, halogenated compounds, halogens, strong acids, strong oxidizing agents
HAZARDOUS DECOMPOSITION/BY-PRODUCTS:	Oxides of carbon
POSSIBILITY OF HAZARDOUS REACTIONS:	Hazardous polymerization will not occur

11. TOXICOLOGICAL INFORMATION

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
Isopropyl alcohol (67-63-0)

Oral LD50	Rat 5045 mg/kg
Dermal LD50	Rabbit 12800 mg/kg
Inhalation LC50	Rat 1600 ppm 4 h

Irritation/Corrosivity Data
Causes serious eye irritation.

Respiratory Sensitization
No data available

Dermal Sensitization
No data available

Germ Cell Mutagenicity
No data available

Component Carcinogenicity

Isopropyl alcohol	67-63-0
ACGIH	A4 - Not Classifiable as a Human Carcinogen

IARC	Monograph 71 [1999]; Supplement 7 [1987]; Monograph 15 [1977] (Group 3 (not classifiable))

Reproductive toxicity
No data available

Specific Target Organ Toxicity - Single Exposure
No information available

Specific Target Organ Toxicity - Repeated Exposure
No information available

Aspiration hazard
No data available

12. ECOLOGICAL INFORMATION

Avoid release to the environment.

Component Analysis - Aquatic Toxicity:

Isopropyl Alcohol	67-63-0
Fish	LC50 96 h Pimephales promelas 9640 mg/L [flow-through]; LC50 96 h Pimephales promelas 11130 mg/L [static]; LC50 96 h Lepomis macrochirus >1400000 µg/L
Algae	EC50 96 h Desmodesmus subspicatus >1000 mg/L IUCLID; EC50 72 h Desmodesmus subspicatus >1000 mg/L IUCLID
Invertebrate	EC50 48 h Daphnia magna 13299 mg/L IUCLID

Persistence and degradability N/A
Bioaccumulative potential N/A
Mobility in soil N/A
Results of PBT and vPvB assessment
EU - Interim Strategy for Management of PBT and vPvB Substances No components of this material are listed.
Other adverse effects No additional information available.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Scrap and waste should be recycled or stored in a dry, sealed container for later disposal. Disposal must be in accordance with Federal, State/Provincial, and Local Regulations.

14. TRANSPORT INFORMATION

Transport in accordance with applicable regulations and requirements.

Excepted Quantities (EQ) Code: E2 (≤30ml per inner package, ≤500ml per outer package)
For Reference Only:
UN Number: 1219
UN Proper Shipping Name: Isopropanol, 3
Packaging Group: PG II
Environmental Hazards: None

TRANSPORT HAZARD CLASSES:

US DOT Hazardous Material Classification: Not regulated - Quantity Limitations (≤5,000ml aircraft/rail, ≤60,000ml cargo aircraft)
Hazmat at all levels, not regulated below limited quantities / excepted quantities
Water Transportation: Not regulated
IATA Hazardous Material Classification: Not regulated - Excepted Quantities (EQ) Code: E2 (≤30ml per inner package, ≤500ml per outer package)
ADR Road Regulations Not regulated - Excepted Quantities (EQ) Code: E2 (≤30ml per inner package, ≤500ml per outer package)
IMDG Sea Regulations Not regulated - Excepted Quantities (EQ) Code: E2 (≤30ml per inner package, ≤500ml per outer package)
ADG Land Transportation Not regulated

15. REGULATORY INFORMATION

All ingredients used to manufacture this product are listed on the EPA TSCA Inventory. Finished product is not listed on the EPA TSCA Inventory.

U.S. FEDERAL REGULATIONS:
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b).

Isopropyl Alcohol	67-63-0
SARA 313	1 % de minimis concentration (only if manufactured by the strong acid process, no supplier notification)

Ethanol	64-17-5
SARA 313	

STATE REGULATIONS: Not regulated
Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Isopropyl Alcohol	67-63-0
	1%

INTERNATIONAL REGULATIONS: Not regulated

EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorization
No components of this material are listed.

EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances Subject to Authorization
No components of this material are listed.

EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles
No components of this material are listed.

EU - Biocides (1451/2007) - Existing Active Substance

Isopropyl Alcohol	67-63-0
	Present

Germany Regulations

Germany Water Classification
Isopropyl alcohol (67-63-0) ID Number 135, hazard class 1 - low hazard to waters

Denmark Regulations
No components of this material are listed.

Chemical Safety Assessment
No chemical safety assessment has been carried out for the substance/mixture.

AUSTRALIAN REGULATIONS: Australia inventory (AICS): This material is listed or exempted

16. OTHER INFORMATION

LEGEND:

ACGIH	American Conference of Governmental Industrial Hygienists
ADG	Australian Dangerous Goods Code
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
BCF	Bioconcentration factor
C.A.S.	Chemical Abstract Service
CLP	Classification, Labeling and Packaging
DOT	Department of Transportation
EC	Effective Concentration
EPA	Environmental Protection Agency
GHS	Global Harmonized System
HMIS	Hazardous Material Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
LC	Lethal Concentration
LD	Lethal Dose
NA	Not available
NE	Not established
NIOSH	National Institute for Occupational Safety & Health
NOEC	No observed effective concentration
NOHSC	National Occupational Health and Safety Commission (Australia)
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
P_{ow}	Octanol water partition coefficient
SDS	Safety Data Sheet
STEL	Short-Term Exposure Limit
STOT	Specific target organ toxicity
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA:	Time Weighted Average
US DOT:	United States Department of Transportation

PREPARATION INFORMATION:
This update supersedes all previously released documents.

DISCLAIMER:
The information and recommendations contained within this publication have been compiled from sources believed to be reliable and to represent the best information available to HMT Solder at the time of issue. No warranty, guarantee, or representation is made by HMT Solder nor does HMT Solder assume any responsibility in connection there within; nor can it be assumed that all acceptable safety measures or other safety measures may not be required under particular or exceptional conditions or circumstances. The data on this Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Safety Data Sheet as a source for hazard information.